CLAIM SUMMARY DOCUMENT

Claim 1 (Previously Amended): A process for detecting a complementary DNA fragment which comprises the steps of:

bringing single-stranded sample DNA fragments having a radioactive label in a liquid phase into contact with a DNA micro-array having a support and at least two defined areas in each of which a group of probe compounds selected from the group consisting of DNA molecules, DNA fragments, synthesized oligonucleotides, synthesized polynucleotides, and PNA (peptide nucleic acid), are fixed under such condition that a group of the probe compounds fixed in one area differs from a group of the probe compounds fixed in another area, so that DNA fragments complementary to a group of the probe compounds are fixed by hybridization to the area in which the last-mentioned group is fixed;

removing unfixed sample DNA fragments from the DNA micro-array;

keeping the DNA micro-array in contact with a radiation image storage panel containing a stimulable phosphor via a spacer sheet having openings in areas corresponding to the areas on which groups of the probe compounds are fixed, so that the stimulable phosphor sheet can absorb and store radiation energy of the radioactive label coming from the fixed DNA fragments through the openings;

irradiating the radiation image storage panel with a stimulating light, so that the image storage panel releases a stimulated emission from the area in which the radiation energy is stored;

detecting the stimulated emission photoelectrically to obtain a series of electric signals; and

processing the electric signals to locate the area in which the complementary DNA fragments are fixed.

Claim 2 (Original): The process of claim 1, in which the spacer sheet is made of non radiation-transmitting material.

Claim 3 (Original): The process of claim 1, in which the radiation image storage panel is irradiated with a stimulating light after it is separated from the DNA micro-array.

Claims 4-7 (Withdrawn)

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Claim ~~8~~ (New): A process for detecting a complementary DNA fragment which comprises the steps of:

bringing single-stranded sample DNA fragments having a radioactive label in a liquid phase into contact with a DNA micro-array having a support and at least two defined areas in each of which a group of probe compounds selected from the group consisting of DNA molecules, DNA fragments, synthesized oligonucleotides, synthesized polynucleotides, and PNA (peptide nucleic acid), are fixed under such condition that a group of the probe compounds fixed in one area differs from a group of the probe compounds fixed in another area, so that DNA fragments complementary to a group of the

probe compounds are fixed by hybridization to the area in which the last-mentioned group is fixed;

removing unfixed sample DNA fragments from the DNA micro-array;

keeping the DNA micro-array in contact with a radiation image storage panel containing a stimulable phosphor via a spacer sheet having openings in areas corresponding to the areas on which groups of the probe compounds are fixed, so that the stimulable phosphor sheet can absorb and store radiation energy of the radioactive label coming from the fixed DNA fragments through the openings;

irradiating the radiation image storage panel with a stimulating light, so that the image storage panel releases a stimulated emission from the area in which the radiation energy is stored;

detecting the stimulated emission photoelectrically to obtain a series of electric signals; and

processing the electric signals to locate the area in which the complementary DNA fragments are fixed,

wherein said spacer sheet has a thickness in the range of 10 to 300 μm and is made of a non radiation-transmitting material is selected from the group consisting of aluminum, brass, stainless steel, polyethylene terephthalate and polyethylene naphthalate.